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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,126	12/15/2003	Ken A. Nishimura	10030571-1	5946

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EXAMINER

THOMAS, BRANDI N

ART UNIT PAPER NUMBER

2873

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/737,126

Applicant(s)

NISHIMURA ET AL.

Examiner

Brandi N Thomas

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-26 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/15/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


RICKY MACK
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Action.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 10, 11, and 20-24, are rejected under 35 U.S.C. 102(e) as being anticipated by Hirawa (6822670 B2).

Regarding claim 1, Hirawa discloses, in figures 11 and 12, a spatial light modulator, comprising: memory elements (431 and 432) configured to store data (512) therein and shift data (512) therebetween (col. 10, lines 33-35 and 41-42); and light modulation elements (121) alterable in response to the data (512) stored in respective ones of the memory elements (431 and 432) (col. 10, lines 35-37 and 41-43).

Regarding claim 2, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said memory elements (431 and 432) are arranged in an array having rows and columns (col. 10, lines 21-22).

Regarding claim 3, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said memory elements (431 and 432) are configured to shift the data bi-directionally between rows (col. 13, lines 20-24).

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Regarding claim 4, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said memory elements (431 and 432) are configured to shift the data bi-directionally between columns (col. 13, lines 20-23).

Regarding claim 5, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said memory elements (431 and 432) are configured to shift the data bi-directionally between at least one of non-adjacent rows and non-adjacent columns (col. 13, lines 20-23).

Regarding claim 10, Hirawa discloses, in figures 11 and 12, a spatial light modulator, further comprising access control elements (41) connected to said respective memory elements (431 and 432) (col. 10, lines 41-47).

Regarding claim 11, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said access control elements (41) include a forward access control element operable to control the state of said respective memory element during a forward shift operation and a reverse access control element (41) operable to control the state of said respective memory element during a reverse shift operation (col. 10, lines 56-67 and col. 11, lines 1-7).

Regarding claim 20, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said light modulation elements (121) comprises micromirrors (col. 22, lines 20-22).

Regarding claim 21, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said memory elements (431 and 432) are arranged in blocks (figure 11), a first one of said blocks configured to receive data (512) from an external input and the others of said blocks configured to receive data (512) from other ones of said memory elements (431 and 432) (col. 10, lines 33-47).

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Regarding claim 22, Hirawa discloses, in figures 11 and 12, a method for performing photolithography, said method comprising: loading data representing an image into memory elements (431 and 432) in communication with respective light modulation elements (121) (col. 10, lines 35-37), altering ones of the light modulation elements (121) in response to the data (512) loaded thereunto to transfer the image onto a substrate, shifting the data (512) between the memory elements (431 and 432) (col. 10, lines 37-41); altering ones of the light modulation elements (121) in response to the data shifted thereunto to transfer the image onto the substrate (col. 10, lines 41-47).

Regarding claim 23, Hirawa discloses, in figures 11 and 12, a method for performing photolithography, wherein each said altering further comprises: applying a voltage in response to the data (512) to the change optical characteristics of the light modulation elements (121) (col. 10, lines 47-55).

Regarding claim 24, Hirawa discloses, in figures 11 and 12, a method for performing photolithography, wherein said shifting further comprises: utilizing a ripple clock (521) to control the timing of said shifting (col. 10, line 35-41).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 6-9 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirawa (6822670 B2) as applied to claim 1 above, and further in view of Morokawa et al. (4302829).

Regarding claim 6, Hirawa discloses the claimed invention but does not disclose the memory elements in a nonorthogonal pattern. Morokawa et al. shows that it is known to provide a nonorthogonal pattern for a bistability (col. 11, lines 57-61). Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the device of Hirawa with the pattern of Morokawa et al. for the purpose of providing bistability (col. 11, lines 57-61).

Regarding claim 7, Morokawa et al. discloses a spatial light modulator, wherein each of the memory elements are static memory elements (col. 28, lines 55-57).

Regarding claim 8, Morokawa et al. discloses a spatial light modulator, wherein each of the memory elements includes a feedback element (col. 21, lines 31-34).

Regarding claim 9, Morokawa et al. discloses a spatial light modulator, including a feedback element but does not specifically disclose that the feedback element is a weak feedback element. However, it would have been obvious to someone of ordinary skill in the art at the time the invention was made to use a weak feedback element for the purpose of minimizing voltage currents.

Regarding claim 12, Morokawa et al. discloses a spatial light modulator, wherein each of said memory elements further includes an output node electrically coupled to an electrode (764) of said respective light modulation element and to an input node of an additional one of said memory elements (figure 24D and col. 35, lines 26-30).

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Regarding claim 13, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said memory elements (431 and 432) are interconnected in a shift register configuration (col. 10, lines 25-30).

Regarding claim 14, Morokawa et al. discloses a spatial light modulator, wherein said memory elements each include a master-slave flip-flop (col. 11, lines 51-52).

Regarding claim 15, Hirawa discloses, in figures 11 and 12, a spatial light modulator, further comprising: a timing circuit (521) in communication with each of said memory elements (431 and 432) to shift data between said memory elements (431 and 432) (col. 10, lines 40-47).

Regarding claim 16, Hirawa discloses, in figures 11 and 12, a spatial light modulator, wherein said timing circuit comprises a ripple clock (521) (col. 10, line 35).

Regarding claim 17, Morokawa et al. discloses a spatial light modulator, wherein said light modulation elements comprises liquid crystal material (col. 3, lines 50-54).

5. Claims 18, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirawa (6822670 B2) and Morokawa et al. (4302829) as applied to claim 17 above, and further in view of Matsui (6320635 b1).

Regarding claim 18, Hirawa and Morokawa et al. disclose the claimed invention but do not specifically disclose a common electrode and a pixel electrode. Matsui discloses, in figures 2 and 3B, a spatial light modulator, wherein said light modulation elements further comprise: a common electrode (2a) configured to receive a common electrode signal for said light modulation elements (col. 8, lines 4-9); and a respective pixel electrode (2b) configured to receive the data stored in said respective memory elements (col. 8, lines 10-15).

Regarding claims 25 and 26, Matsui discloses, in figures 2 and 3B, moving at least one of the substrates (1a) and the light modulation elements (3a) relative to the other.

Allowable Subject Matter

6. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 19, wherein the claimed invention comprises wherein said timing circuit is operable to shift inverted data from a first one to a second one of the memory elements and to switch the common electrode signal to alter the light modulation element associated with the second one of the memory elements as a function of the inverted data, as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on 8-5.

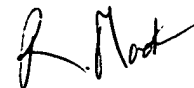
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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RICKY MACK
PRIMARY EXAMINER